Jan. 5, 1954 B. GUISASOLA 2,664,786

SLIDE AND BARREL SECURING KEY FOR AUTOMATIC PISTOLS

Filed Aug. 26, 1947

FIG. 1.

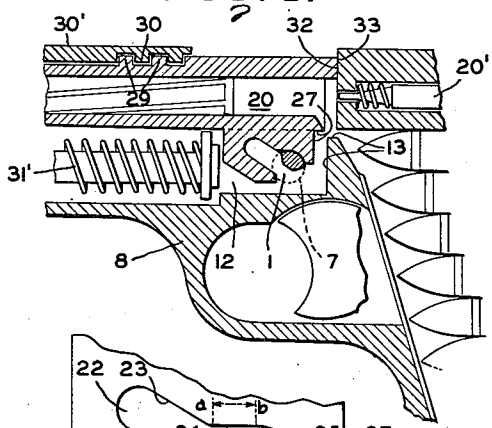


FIG. 2.

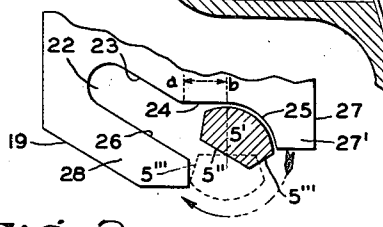


FIG. 3.

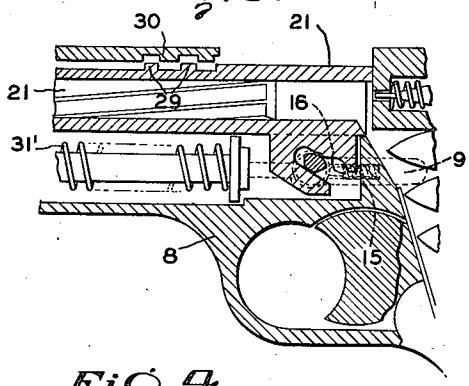


FIG. 4.

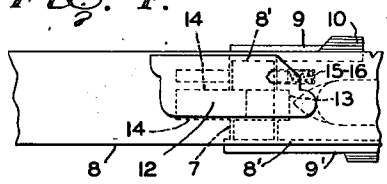


FIG. 5.

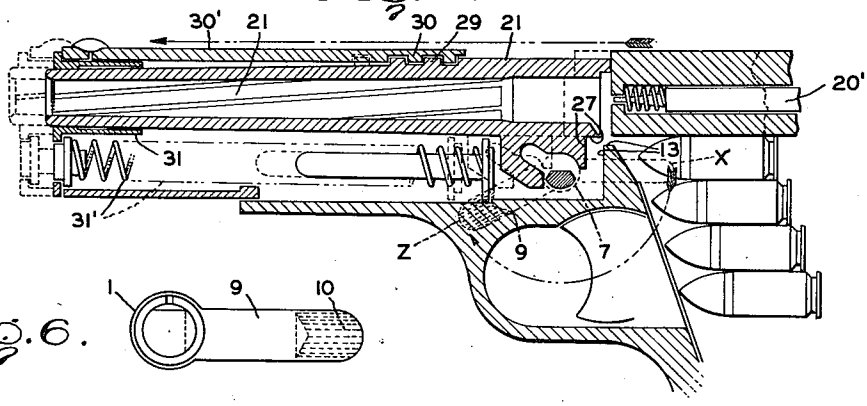


FIG. 6.

FIG. 7.

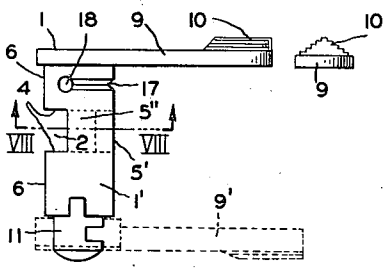
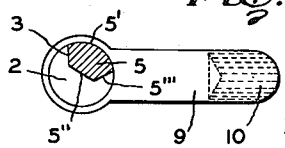


FIG. 8.



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SLIDE AND BARREL SECURING KEY FOR AUTOMATIC PISTOLS

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Application August 26, 1947, Serial No. 770,725

1 Claim. (Cl. 89—163)

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This invention relates to automatic pistols having movable barrels, and more particularly to a locking mechanism therefor.

Generally a rack gear mechanism is used to lock and unlock the slide and barrel mechanisms of such a gun, but it has been found difficult, if not impossible, with such a device to maintain the axis of the barrel absolutely aligned on the target during the passage of the projectile through the bore of the weapon. This defect impairs, if it does not destroy, the efficacy of the firearm.

The principal object of this invention, therefore, is to provide an improved locking device to lock the barrel and slide together at all times that the bullet is passing through the barrel. When the bullet has left the muzzle and is in free flight, and not before, the new and improved device permits unlocking of the barrel.

The locking and unlocking are effected by means of a simple lever mechanism, without the need for screwing or unscrewing, and without risk of damage to the firearm or injury to the user.

Other objects will become apparent to a person skilled in the art from the ensuing description.

In the accompanying drawings, forming part of this specification, a preferred embodiment of the invention is illustrated. It is to be understood, however, that this description is not limited, and that other forms and modifications may be used, as defined in the appended claim.

In the drawings:

Fig. 1 is a partial vertical longitudinal section of the new and improved firearm at the instant of firing a shot, i. e., when the propelling charge is detonated by the firing pin.

Fig. 2 shows on an enlarged scale a portion of the improved locking mechanism in the position of Fig. 1.

Fig. 3 is a view similar to Fig. 1, but at a time when the projectile has left the muzzle of the pistol and the barrel is ready to be unlocked.

Fig. 4 is a plan view of the members shown in Fig. 3.

Fig. 5 is a view similar to Fig. 1 and Fig. 3, but at a time when the new locking mechanism has been operated to unlock the barrel.

Fig. 6 is an elevation of the new and improved locking key forming an essential feature of my invention.

Fig. 7 is a plan view of the member shown in Fig. 6.

Fig. 8 is a vertical section, taken on the line VIII—VIII of Fig. 7.

The firearm comprises a barrel 21, a frame 8, a breech chamber 20, a firing pin 20', a slide 30',

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a barrel bushing 31, and a recoil spring 31' operating in a recoil chamber in a manner well-known in the art. The upper part of the barrel 21 is formed with locking teeth 29 that are adapted to engage with complementary teeth 30 of the slide 30', so that in normal or rest position of the gun the teeth are engaged as shown in Fig. 1, with the result that the barrel 21 and the slide 30' are locked together. Unlocking will be effected in a manner to be more fully described hereinafter.

Fixed to the underside of the barrel 21, underneath the breech chamber 20 and posterior of the recoil spring 31', is a cam 19, shown more particularly in Fig. 2. The cam 19 is open-notched shaped, with the open end of a notch 22 facing downwardly and rearwardly. The notch 22 is bounded by an inclined straight face 23 at its forward upper portion, thence clockwise, a straight horizontal face 24, thence a cylindrical face 25.

The high portion of the notch 22 is curved, and, proceeding counter-clockwise from this curved apex, there is another straight inclined face 26 parallel to the face 23. The face 26 terminates in a line substantially below the line of intersection of the straight face 23 and the straight horizontal face 24. The horizontal extent of the face 24 may be represented by the line *a*—*b* in Fig. 2, the references *a* and *b* being the limits of the straight face 24.

A locking key 1 that forms an important features of this invention is designed to cooperate with the cam 19, in a manner to be more fully described hereinafter.

The key 1 comprises a substantially cylindrical portion 1', extending about a horizontal axis when it is assembled in the weapon of Figs. 1, 3 and 5. At one end of the cylindrical portion 1' is a lever 9 at right angles thereto and extending on the exterior of the gun. The lever 9 acts to rotate the cylindrical portion 1' of the key about its horizontal axis, as will be shown.

At about the center of the cylindrical portion 1' of the key 1 is formed a semi-cylindrical slot 2 (see Fig. 7) having a circular projecting end portion 3 (see Fig. 8), and two radial side walls 4 (see Fig. 7) defining the slot 2 from the surface of the cylinder 1'. The remainder of the cylinder 1' in the region of the slot 2 forms an essentially semi-cylindrical core 5 (see Figs. 7 and 8), having a cylindrical surface 5' coextensive with the cylinder 1', an inner flat surface 5'' (see Fig. 8), and two beveled retroceding end portions 5'''.

The frame 8 is suitably provided with a hori-

zontal cylindrical housing 7 underneath the breech chamber 20, and the cylindrical portion 1' of the key 1 is adapted to fit in this housing 7 to cooperate with the cam 19. When the key 1 is assembled in the housing 7 of the frame 8, the lever 9 projects outside the frame 8 so as to be manually operable, and, to facilitate handling, the lever 9 is provided with a knurled end 10. The end of the cylindrical portion 1' remote from the lever 9 is formed with a reduced cylindrical extension 11, to which an auxiliary lever 9' may be removably secured for operation on the opposite side of the frame 8. If the auxiliary lever 9' is used, it is made removable from the key 1, so that the key 1 may be readily inserted into the housing 7.

The frame 8 is provided at the ends of the housing 7 with stops 8' to limit the positions of the levers 9 and 9' of the key 1. It is further provided with a central longitudinal channel 12 having a horizontal bottom, a vertical transverse back wall 13, and two vertical, parallel longitudinal side walls 14 (see Fig. 4). In one of the side walls 14 there is provided a bore 15 having a spring-pressed retainer pin 16 adapted to frictionally engage a circular groove 17 on the rear surface of the cylindrical portion 1' of the key 1 (see Fig. 7).

The groove 17 terminates at both ends in an aperture 18 adapted to receive the end of the spring-pressed retainer pin 16, to secure the key 1 in the shooting or locking position X of the weapon, or in the removal position Z, as will be more fully described (see Fig. 5).

The barrel 21 and slide 30' are of course longitudinally movable with respect to the remainder of the gun. The frame 8 is relatively stationary, and since the key 1 is accommodated in the housing 7 of the frame 8, the key 1 is held longitudinally immovable with respect to the frame 8, although it is rotatable about the axis of the cylindrical portion 1', as hereinbefore mentioned. The cam 19 and the core 5 are so contoured that the cam 19 slides over the appropriate face of the core 5' to produce the desired locking and unlocking action of the barrel 21 and slide 30' with respect to the frame 8.

The operation of the device is as follows:

When the firearm is in the normal or rest position (Fig. 1), the barrel 21 and the slide 30' are locked to each other, the muzzle of the barrel 21 is held within the bushing 31, and the back face 32 of the barrel 21 bears against the vertical face 33. The cylindrical surface 5' of the core 5 of the key 1 is in contact with the similar surface 25 of the cam 19, and the expansive force of the recoil spring 31' acts to keep these cylindrical surface 5' and 26 together, and also to lock the teeth 29 of the barrel 21 with the teeth 30 of the slide 30'.

When a shot is fired, the slide 30' recoils jointly with the barrel 21. The barrel 21 initiates the recoil movement by sliding with its horizontal face 24 from *b* to *a* (Fig. 2) upon the cylindrical face 5' of the key 1, whereby the initial direction of the barrel remains unchanged during the period that the bullet is passing through the bore. When the bullet has left the nozzle, the recoil is still proceeding, and the inclined surface 26 of the cam 19 meets the inclined flat surface 5'' of the key 1. This flat 5'', it will be observed, is parallel with the flat 26 of the cam 19. Since the key 1 is secured in position in the frame 8, the flat 26 of the cam 19 will engage the flat 5'' and be moved downwardly thereby.

As the breech end of the barrel 21 is lowered, its teeth 29 will be disengaged from the mating teeth 30 of the slide 30'.

The cam 19 terminates posteriorly in a flat rectangular face 27, and as the barrel 21 continues its recoil this face 27 bears against a similar rectangular face 13 on the frame 8, whereupon recoil of the barrel 21 is terminated. This is the position of parts in Fig. 3. The slide 30', however, is still in recoil, and performs the steps of recoil, recovery, and cartridge-feeding.

Near the end of the recoil, the face 33 engages the face 32 of the barrel 21 and pushes the barrel 21 forwardly, thereby initiating the recovery movement. Now the inclined face 23 of the cam 19 slides on the cylindrical face 5' of the key 1, and causes the barrel 21 to rise and again engage its teeth 29 with the teeth 30 of the slide 30'. This engaging motion stops when the edge *a*, at the junction of the horizontal surface 24 and the inclined flat 23, touches the cylindrical face 5' of the key 1. As a result, both the barrel 21 and the slide 30 begin to move forward together. As they move, the horizontal face 24 slides from *a* to *b* upon the cylindrical face 5'. This completes the cycle of slide and barrel motions. The slide 30' is now locked. The curved face 25 of the cam 19 re-engages the similar face 5' of the key 1, and the gun is again in the position of Fig. 1, ready for another shot. All this has taken place automatically, without manual movement of the lever 9 or 9', by virtue of the configuration of the cam 19 and the key 1.

When, however, it is desired to disassemble the gun, the key 1 provides a quick, easy and safe means for this purpose. The lever 9, or 9', is turned from its normal or shooting position X (Fig. 5), which is parallel with the barrel 21, through an obtuse angle to the position Z. Here, the core 5 of the key occupies the position shown in full lines in Fig. 5 (or in broken lines in Fig. 2), where the flat surface 5'' is horizontal and uppermost. Now when the slide 30' is pushed forwardly, as shown by the arrow in Fig. 5, the slide 30', the barrel 21, and their associated parts encounter no impediment to their movement, and are easily removable from the frame 8. The rear part 27' of the cam 19 can, in this position of the key 1, pass over the face 5''. When the components of the firearm are to be assembled, a simple movement of the lever 9 will at once act to firmly lock the members in their firing position. The stops 8' on the sides of the frame 8 serve to define the limits of movement of the levers 9 and 9', and the spring-pressed retainer pin 16 can enter either of the apertures 18 in the groove 17 to hold the key 1 in its desired position.

The lever 9' is removable from the cylinder 1', so that the key 1 can be taken out bodily. The lever 9' fits removably over the reduced end 11 of the cylinder 1', as hereinbefore described.

It will be noted, therefore, that the key 1 provides a means that will ensure absolute alignment of the parts of the gun during recoil, yet at the same time it provides a simple means for locking and unlocking the members.

I claim:

In an automatic pistol having a barrel and slide axially movable on a frame for actuation of a reloading mechanism by recoil thrust, the improvement of a combined recoil guide cam and key to releasably secure said barrel and said slide

to said frame comprising a lug on the lower and rearmost end of said barrel, a rearwardly sloping cam slot in said lug having parallel sides for its upper end and an axially aligned cam face toward its rear end with a key engaging stop portion of said lug therebehind, a key in said cam slot operable to guide said barrel and said slide rearwardly relative to said frame, and handle means on said key for rotating said key in said frame from barrel-securing position in engagement with said axially aligned cam face and said stop portion of said lug to barrel-release position out of engagement with said cam face and said stop portion whereby said barrel and said slide may be moved axially forward on said frame.

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References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
422,846	Sneider	Mar. 4, 1890
1,618,510	Browning	Feb. 22, 1927
2,090,657	Williams	Aug. 24, 1937

FOREIGN PATENTS

Number	Country	Date
39,167	Australia	Oct. 11, 1909
334,449	Germany	Mar. 15, 1921
722,555	France	Jan. 4, 1932
751,009	France	June 12, 1933